Chesterfield County, Virginia

Memorandum

DATE: September 8, 2006

TO: Chesterfield County Planning Commission

FROM: Richard McElfish, Director of Environmental Engineering
Scott Flanigan, Water Quality Manager SF/MM

SUBJECT: Status Report -
Swift Creek Reservoir Watershed Master Plan and Maintenance Program

During the July 18, 2006 CPC work session on the Upper Swift Creek Plan, commissioners requested monthly progress updates on issues regarding the **Swift Creek Reservoir Watershed Master Plan** (*Watershed Master Plan*). Staff provided, during the August 15, 2006 work session, a framework of tasks and steps needed to address regulatory issues concerning the *Watershed Master Plan* and options and alternatives for a path forward. The tasks are divided into three phases – short-term, near-term and long-term – and will be conducted concurrently with the phases indicating expected schedule for completion. The attached document details the progress made on those short-term topics outlined at the prior session and addresses the additional concerns raised during the session.

Attachments
Document A: Copy of the draft of the ordinance amendments
Document B: Concerns or questions raised by the commissioners during work sessions
Document C: Near-term and long-term tasks to be discussed a future work sessions

c: Lane Ramsey
Pete Stith
Kirk Turner

1. Short-term (should be addressed in the period ending December 2006)

The tasks outlined below are to address on-site stormwater management and the issues generated by these changes. The information gained in modeling current land-use and predicted development and its impact on water quality will be used to guide future decisions.

Refer to the attached Appendix A for a copy of the draft of the amendments.

a. County Ordinances

i. Upper Swift Creek Watershed Ordinance and others

Adopt amendments to zoning and other ordinances, as necessary, which would require development to treat stormwater runoff onsite and/or to implement other remedies.

Sec. 19-237. Upper Swift Creek Watershed

Sec. 19-238. Development regulations - A draft-modified ordinance has been developed for review. The major modifications include (1) the requirements for on-site stormwater treatment and (2) the availability of other mitigation measures for on-site treatment equal to the required pollutant removal for that development.

Sec. 19-238.5. Boundary adjustments, Sec. 19-239. Exemptions, and Sec. 19-240. Exceptions – Sections were considered redundant with respect to Division 4. Chesapeake Bay Preservation Areas, therefore the sections were deleted.

ii. Pro-rata Share Program

Adopt amendments to the funding ordinances, as necessary to address contributions, fee structure and accounts for developments that are under construction or in the review process.

Sec. 12-71. Purpose and intent of article, Sec. 12-72 Basis for the pro-rata share fee, Sec. 12-73 Pro-rata share contributions, Sec. 12-74 Pro-rata share accounts, and Sec. 12-75. Pro-rata fee payments - The ability for the county to require payment as part of the current Watershed Master Plan will no longer be available, therefore these sections were deleted. For developments considered vested under the current program, payment will still be an option as a means for stormwater treatment.

iii. Best Management Practice (BMP) Maintenance Fee

Adopt amendments to the funding ordinances, as necessary, to address contributions, fee structure and accounts for current BMP maintenance program. The maintenance fee per residential unit would remain. A fee may be added for sites.

iv. Maintaining Silt Basins On-site

Adopt amendments to address that section of the erosion and sediment control ordinance pertaining to the Swift Creek Reservoir, which requires sediment basins to be maintained on-site until a permit to allow construction for a regional facility has been received.

Sec. 8-8. Responsibility for the erosion and sediment control plan – The section has been amended to require sediment basins to remain on-site until compliance with 12-238(d)(1) has been achieved.

b. County Program Policy

Review current program policies, which may allow for alternatives for stormwater treatment and loading outside of current ordinances. An example of this, would be, implementation of the current pollutant credit program already in use outside of the Swift Creek Reservoir Watershed. Environmental Engineering credit program consists of BMP facilities that have additional unused treatment capacity. The additional capacity is converted to phosphorous credits that the owner may sell.

Environmental Engineering policy concerning the existing pollutant credit program has been modified to allow participation of developments only within the Swift Creek Reservoir Watershed and it sub-watersheds. This program will be available once the necessary ordinances requiring on-site stormwater controls have been adopted.

c. Zoning Cases

i. Future Zoning Cases

As a condition of any future zoning case, staff will request a proffer that all stormwater management will be addressed onsite until such time that the county can develop a revised regional approach to treat stormwater.

ii. Property Already Zoned and in the Development Phase

Provide technical guidance on stormwater management and site development that can be implemented within the context of existing ordinances.

iii. Property Already Zoned and not in the Development Phase

Stormwater management impacts should be addressed onsite until such time that the county can develop a revised regional approach to treat stormwater.

d. Determine Annual Phosphorus Load Contributions to Reservoir

As a result of concerns involving the validity of the P-8 and Reckhow models during the August 15, 2006 CPC work session, additional tasks were added to address model calibration and validation.

i. Model Calibration and Validation (expected time of completion Mid October)

The purpose of this task is to verify that the flow and TP calibration conducted previously (based on 1999 land use and precipitation) is appropriate and to validate the calibration with 2003 land use and precipitation data. The 1999 land use calibration verification and the 2003 land use validation will consist primarily of comparing the P-8 data from three tributary models with the flow and TP data collected at the Department of Utilities' monitoring stations. The final step is to compare the Reckhow model output with the observed water quality data from the reservoir. This will confirm the ability to predict runoff and TP load on an annual basis and use those results as input to an independent model that in turn predicts the average in-lake TP.

ii. Current Annual Total Phosphorus Loads ***(expected completion – early November)***

Model current developed land to determine projected annual loads.

The purpose of this task is to provide an updated load calculation for TP based on the most recently available land use. Current land use that is based on the 2005 parcel data and is consistent with the previous land use layers (1999 and 2003) will be developed and modeled. The P-8 models previously used for the 2003 land use validation runs will be updated based on the 2005 land use and run. The 2005 land use validation will consist primarily of comparing the P-8 data from three tributary models with the flow and TP data collected at the Department of Utilities' monitoring stations. The annual flow and TP load output from all of the models will be input into the Reckhow model and the results will be compared to the in lake monitoring data for additional validation.

iii. Predicted Annual Total Phosphorus Loads ***(expected completion – early December)***

Determine annual phosphorus load contributions from Powhatan County, property rezoned, in the site review process, tentative process or those developments that may be considered **vested** under current "**Swift Creek Reservoir Watershed Master Plan.**"

The purpose of this task is to assess the worse case scenario involving all parcels that are approved for development but not yet developed. It will assess the impact to the reservoir if all of these parcels are developed but none of the original regional ponds are constructed to remove TP. This task will look at two cases. Case 1 considers all of the zoned parcels. Case 2 considers all of the zoned parcels and their known requirements and proffers.

iv. Determine the Reduction in Annual Total Phosphorus Loads

Similarly, determine annual phosphorus load removal associated with existing on-site controls, existing BMPs and new/anticipated RPAs.

Existing BMP removals will be calculated post modeling. Loads for each tributary watershed will be reduced according to the BMPs located within each watershed.

v. Determine the predicted in-lake TP Concentrations

This is critical to ensure that net annual phosphorus load does not exceed projected contribution (25,000 lbs/yr) based on current modeling. A projected load greater than 25,000 lbs/yr could result in exceeding the recommended county criteria of 0.05 mg/L or the pending State Water Quality Standard of 0.04 mg/L for an in-lake TP concentration.

The resulting TP load and projected in-lake TP concentration will be provided with each of the above land use calculations.

vi. ***0.22 lb/yr – P-8 Correlation***

The purpose of this task is to determine a method that will allow the County to compare the modeling and loading calculations that were developed for the Swift Creek Reservoir Watershed Master Plan with the calculations that are used by developers to meet the Chesapeake Bay requirements.

e. Regional Pond Facility

Submit expanded alternatives assessment to the Army Corps of Engineers, USEPA, USFWS, and VA DEQ as part of ongoing efforts to obtain permits for modified Charter Colony pond(s).

An Alternatives Analysis for LTC30 and LTC20/25 has been completed and submitted to the regulatory agencies for review. This was to address agencies' concerns as part of the permitting process.

f. Powhatan County

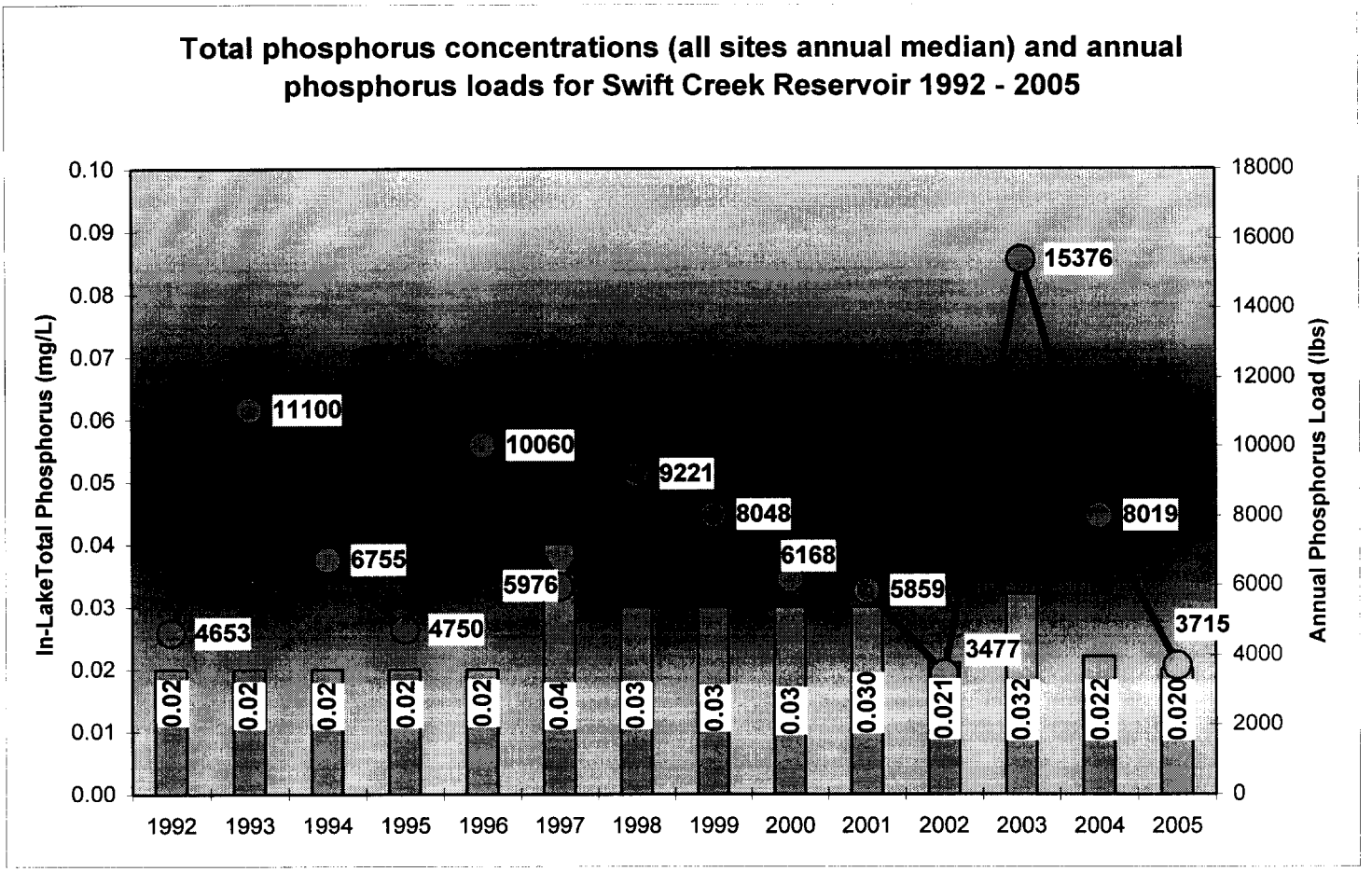
Determine Powhatan County's current land-use plan and its impact on water quality in the Reservoir. Information on the Powhatan's land-use plan will be needed to determine TP loading in (c.ii.) above.

The current development and future land-use plan has been updated and placed into GIS. This information will be used as part of the modeling process as necessary.

DOCUMENT B
Concerns or questions raised by the commissioners

August 15, 2006 CPC Work Session

a. ***There was a request for a graph, which compared annual median total phosphorus (TP) concentrations in the Reservoir and the annual watershed TP loadings (total from the eight tributaries) for the years 1992-2005.***



b. ***There was concern expressed that stormwater management facilities or BMPs may not actually achieve the assigned pollutant removal efficiency.***

Stormwater management facilities or BMPs designs are required to meet the technical design and specifications and maintenance requirements as defined in the Virginia Stormwater Management Handbook (DCR, 1999). "These criterion were derived from available sources such as the Northern Virginia BMP Handbook, Hampton Roads BMP Handbook, and various other publications, including those from the Metropolitan Washington Council of Governments and the Center for Watershed Protection. These minimum standards represent current, and in some cases innovative, design information pulled together under one cover in order to promote consistency in the design and construction, and therefore the effectiveness, of stormwater BMPs." The table below outlines the water quality pollutant removal efficiencies.

Water Quality BMP Pollutant Removal Efficiencies	
Water Quality BMP	**Target Pollutant Removal Efficiency**
Constructed wetlands	30%
Bioretention basin	50%
Bioretention filter	50%
Extended detention (2 x WQ Vol)	35%
Extended detention-enhanced	50%
Retention basin I (3 x WQ Vol)	40%
Retention basin II (4 x WQ Vol)	50%
Retention basin III (4 x WQ Vol with aquatic bench)	65%
Sand filter	65%
Infiltration (1 x WQ Vol)	50%
Infiltration (2 x WQ Vol)	65%

DOCUMENT C
Near-term and long-term tasks to be discussed a future work sessions

2. **Near-term (should be addressed in the period ending June 2007)**

The tasks outlined below are to address on-site stormwater management and the direction and modification to the *Watershed Master Plan.* Any modifications to the current plan would require Board of Supervisor's approval.

a. Non-conventional Stormwater Treatment Designs

Upon amending the Upper Swift Creek Watershed Ordinance, residential uses would be required to meet phosphorus loading not to exceed 0.22 lbs/ac/yr. Some of the developments will be unable to meet the 0.22 lbs/ac/yr loading using conventional onsite stormwater treatment facilities (i.e. ponds). Therefore the county would need to develop ordinances or policies to address the non-conventional treatment systems such as Low Impact Development (LID) or better site design. These additional measures would allow developments greater flexibility in meeting the more restrictive loading requirements. This would require the need for new procedure to be put in place to make sure that LID is incorporated into the review process. Developments still unable to meet the loading requirements may be required to address the additional pollutant load by other means. This could include other measures within the Swift Creek Reservoir such as water quality pollutant trading, purchase of open or conservation space, alternative credit program or off-site treatment.

b. Study the feasibility of other types of pollutant trading options for protection of water quality in the Reservoir.

i. The following analyses would be the first two steps in such a feasibility study.

1) Assessment of Pollutant Baselines for Trading Purposes

This would involve determining the potential credit supply (or demand) available from the reservoir, as well as the baseline pollutant control or reduction requirements faced by landowners and developers (for developed land, as well as land that may be developed, or otherwise undergo a change in use).

2) Projection of Current and Future Loads Under the Current Management Program

This would involve an analysis that might produce an "Expected" future load pattern, as well as a "Low" and a "High" case that would reflect different assumptions about growth rates and implementation of on-site or other controls. The current land-use plans have already been modeled. Other scenarios may be developed based on different site design within the context of current zoning.

A summary of currently available estimates for loading to the Reservoir and a preliminary assessment of potential credit supply, and technical issues that would need to be addressed ahead of, or as part of the trading analysis, would be identified as part of the short-term and long–term assessments.

ii. The second of two steps in the feasibility study would develop alternative trading scenarios to be considered and evaluate them against key decision criteria.

1) Development of Alternative Trading Frameworks

Based on the comparison of future projected loads without trading to a target loading cap necessary to meet water quality goals, one or more trading frameworks would be developed for consideration. These could be complementary, or mutually exclusive. For example, it is possible that the reservoir could serve as a "County Credit Bank", from which the County could allocate or sell phosphorus reduction credits to developers, under certain rules. Additionally, it may be desirable or necessary to foster a "private" market, whereby developers and existing landowners that reduce loads below their baseline responsibilities could sell credits to developers that cannot technically or cost-effectively meet their on-site baseline requirements.

2) Evaluation of "With Trading" Scenarios Against the Base Case

In this step, key decision criteria would be established to define feasibility and used to evaluate and compare the scenarios. This step would involve projecting future loads under each scenario, as determined by the trading rules and assumptions about how those rules influence credit demand and supply.

c. Develop potential modifications to the *Swift Creek Reservoir Watershed Master Plan*

i. Identify and Evaluate Alternative & Additional Treatment Measures

Additional treatment measures should be developed that could be funded by the future pro-rata fees and expansion of previously identified treatment measures to new locations. This may include the plan to be modified on an interim basis, then modify more completely as part of the longer-term actions. These measures would be used to reduce pollutant loads to the reservoir and may include the following types of projects:

- Restoration, protection and enhancement projects
  - Streams, wetlands and riparian buffer
- Stormwater management and source controls – existing developments and retrofitting
  - Retrofit stormwater facilities and existing ponds
  - Retrofit culverts and drainage systems, including vegetated open channels
  - Outfall controls (end of pipe treatments or facilities that divert smaller storms, provide energy dissipation, and/or treatment of stormwater)
  - Wetland and Stream Channel protection
  - Bioretention facilities, where soils permit
  - Allow more use of rain barrels and dry wells for citizens' homes and businesses
  - Manufactured BMPs (non-residential areas only)

3. **Long-term (should be addressed in the period ending October 2007)**

The tasks outlined below are to address additional stormwater management treatments, designs, pollution prevention, and ordinances that would influence pollutant loadings. Additional monitoring and maintenance programs that should be developed to ensure goals are met.

a. Contributions and Reduction of Pollutant Loadings

i. Compensatory Mitigation Projects

The county should actively pursue compensatory mitigation projects or stream mitigation bank to help address stream and wetland restoration potential within the Swift Creek Reservoir Watershed.

ii. Determine the impact of any additional TP contributions not addressed as part of the current model

These could include stream erosion, failing septic systems, animal contributions and phosphorus cycling in the reservoir, changes in development practices, construction contributions and loss of natural treatment systems (i.e. wetlands, stream connection with flood plains, decrease/increase ground water inputs).

iii. Certain TP removal mechanisms were not accounted for in modeling efforts

Modeling did not take into account those BMPs or lakes/ponds that currently exist, and the additional Resource Protection Areas (RPA) as a result of the on-site determinations. This would result in a decrease of TP loads to the reservoir.

b. Tracking System for Expenses and Evaluation

Develop a watershed tracking system for stormwater treatment and facility evaluation. Develop a time line to include periodic modeling, updates and analysis of watershed data to track goals. Pilot studies may be conducted of two watersheds with the greatest amount of development (i.e., Little Tomahawk and West Branch).

c. Modifications to Site Plan and Subdivision Ordinances

Conduct a complete review of site plan and subdivision ordinances to incorporate consistent standards for modified site design, modified housing densities and smaller lot sizes, reduced impervious surfaces through measures such as modified street widths, reduced setbacks and frontages, modified parking ratios, shared driveways, green area set-asides, and tree preservation.

DOCUMENT A

AN ORDINANCE TO AMEND THE CODE OF THE COUNTY OF CHESTERFIELD, 1997, AS AMENDED, BY REPEALING SECTIONS 12-71, 12-72, 12-73, 12-74, 12-75, 19-238.5 AND 19-240, AND AMENDING AND RE-ENACTING SECTIONS 8-8; 19-232; 19-237, AND 19-238 RELATING TO WATER QUALITY IN THE UPPER SWIFT CREEK WATERSHED

BE IT ORDAINED by the Board of Supervisors of Chesterfield County:

(1) That Sections 19-71, 19-72, 19-73, 19-74, 19-75, 19-238.5 and 19-240 of the Code of the County of Chesterfield, 1997, as amended, are repealed and Sections 8-8, 19-232, 19-237 and 19-238 are amended and re-enacted to read as follows:

Sec. 8-8. Responsibility for the erosion and sediment control plan.

The owner shall be responsible for preparing, submitting and implementing the erosion and sediment control plan. The owner shall also be responsible for the following:

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(e) All sediment basins constructed in conjunction with single family subdivisions that drain to the Swift Creek Reservoir must remain in place and fully stabilized until such time as compliance with 19-238(d)(1) has been achieved. ~~a joint permit from the US Army Corps of Engineers and the Virginia Department of Environmental Quality has been received which allow construction of the regional BMPs required by article VI of chapter 12 of this Code~~.

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~~**Sec. 12-71. Purpose and intent of article.**~~

~~The purpose and intent of this article is to require all developers of land to pay their pro-rata share of the cost of providing necessary facilities to control the volume and quality of runoff generated by new development in the Swift Creek Reservoir Watershed. The locations, type and size of such facilities has been established in the Management Master Plan and Maintenance Program for the Swift Creek Reservoir Watershed, adopted by the board of supervisors in October of 2000 (the "plan"). The plan shall constitute the general improvement program required by Code of Virginia, § 15.2-2243. The plan covers a 61 square mile area encompassed by the Swift Creek Reservoir Watershed. This designated area has common stormwater runoff and drainage conditions in that all runoff generated by new development drains to the Swift Creek Reservoir. The plan establishes a program for the strategic location of six types of structural and nonstructural regional best management practice facilities (BMPs) throughout the Swift Creek Reservoir Watershed. The designated BMPs are denoted on a map entitled "Swift Creek Watershed Siting Scenario 5" which is on file in the office of the director of the department of environmental engineering. The purpose of the system of regional BMPs is to~~

~~control the increased volume, velocity and quality of stormwater runoff that will be caused by anticipated development in the Swift Creek Reservoir Watershed.~~

~~**Sec. 12-72. Basis for the pro-rata share fee.**~~

~~The pro-rata fee has been calculated based on the increased volume of stormwater runoff, expressed as an increase in impervious area, resulting from projected development in the watershed. The projected costs on which the fee is based include design, land acquisition, construction, wetland mitigation and other factors related to the implementation of the regional BMPs enumerated above and are enumerated in the Watershed Management Plan and Maintenance Program for the Swift Creek Reservoir Watershed which is on file in the office of the director of environmental engineering. The formula developed for calculating the fee by the department of environmental engineering, which is hereby adopted as the formula for determining pro rata shares, reflects the product of the amount of impervious area and the established fee per impervious acre. The formula shall be updated weekly to reflect changes in construction costs by applying the engineering new record construction cost index value.~~

~~**Sec. 12-73. Pro-rata share contributions.**~~

~~Anyone proposing to develop land within the Swift Creek Reservoir Watershed shall be required to pay the pro rata share of the cost of providing the regional BMPs enumerated above, as provided for in the Watershed Management Plan and Maintenance Program for the Swift Creek Reservoir Watershed. Payment of the pro rata share fee shall be due prior to the signature of the department of environmental engineering on the record plat for residential development, and prior to the environmental engineering department's approval of the site plan for non-residential development.~~

~~**Sec. 12-74. Pro-rata share accounts.**~~

~~The pro rata payments received shall be kept in a separate account for the implementation of the Watershed Management Plan and Maintenance Program for the Swift Creek Reservoir and expended only for improvements and associated costs made in accordance with the approved plan. Any interest that accrues on such payments shall accrue to the benefit of the county.~~

~~**Sec. 12-75. Pro-rata fee payments.**~~

~~Pro rata fee payments received shall be expended only for necessary engineering, related studies, land acquisition and the construction of those facilities identified in the Watershed Management Plan and Maintenance Program for the Swift Creek Reservoir.~~

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Sec. 19-232. Resource protection area regulations.

In addition to the general performance criteria set forth in section 19-233, the criteria in this section are applicable in resource protection areas.

(a) Land development may be allowed in a resource protection area, subject to the approval of the department of environmental engineering, only if it (i) is water dependent; (ii) constitutes redevelopment; (iii) is a permitted encroachment

established pursuant to subdivision (d) of this section; (iv) is a road or driveway crossing satisfying the conditions set forth in subdivision (a)(4) of this section; or (v) is a flood control or stormwater management facility satisfying the conditions set forth in subdivision (a)(5) of this section.

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(5) Flood control and stormwater management facilities that drain or treat water from multiple development projects or from a significant portion of a watershed may be allowed in resource protection areas, provided that (i) the department of environmental engineering has conclusively established that the location of the facility within the resource protection area is the optimum location; (ii) the size of the facility is the minimum necessary to provide necessary flood control, stormwater treatment, or both; (iii) the facility must be consistent with ~~the Watershed Management Plan for the Swift Creek Reservoir or any other~~ a stormwater management program that has been approved by the Chesapeake Bay Local Assistance Board as a Phase I modification to the county's Chesapeake Bay Preservation Act program; (iv) all applicable permits for construction in state or federal waters must be obtained from the appropriate state and federal agencies, such as the U. S. Army Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission; (v) approval must be received from the department of environmental engineering prior to construction; and (vi) routine maintenance is allowed to be performed on such facilities to assure that they continue to function as designed. It is not the intent to allow a best management practice that collects and treats runoff from only an individual lot or some portion of the lot to be located with in a resource protection area.

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Sec. 19-237. Upper Swift Creek Watershed.

The Upper Swift Creek Watershed consists of all land in the county located upstream of the Swift Creek Reservoir Dam.

Sec. 19-238. Development regulations.

Any use, development or redevelopment of land in the Upper Swift Creek Watershed shall meet the following performance criteria:

(a) No more land shall be disturbed than is necessary to provide for the desired use or development;

(b) Indigenous vegetation shall be preserved to the maximum extent possible consistent with the use or development allowed;

(c) Land development shall minimize impervious cover consistent with the use or development allowed;

(d) (1) Stormwater runoff shall be controlled to achieve the following:

a. For any new use or development, the post-development, nonpoint-source pollution runoff loads of phosphorous and lead shall not exceed the following:

(i) Phosphorus:

1. The post-development total phosphorus load for residential uses located in areas identified in the Midlothian Area Community Plan for low density residential (1.01 to 2.0 units per acre), in the Route 288 Corridor Plan for Residential (1 to 2.0 dwellings per acre), and in the Upper Swift Creek Plan for single family residential~~:~~ (2.0 units/acre or less)~~,~~ shall not exceed 0.22 pounds per acre per year.

2. The post-development total phosphorus load for all other uses shall not exceed 0.45 pounds per acre per year.

(ii) Lead:

1. The post-development total lead load for nonresidential uses and residential uses at a density greater than 2.0 units per acre located in areas identified for such uses in the comprehensive plan shall not exceed 0.19 pounds per acre per year.

2. The post-development total lead load for all other uses shall not exceed 0.03 pounds per acre per year.

b. For redevelopment sites not currently served by water quality best management practices, the existing nonpoint-source pollution runoff loads of phosphorus and lead shall be reduced by at least ten percent after redevelopment; however, the loads of such elements need not be reduced below the levels set forth in subsection (d)(1)a.

c. For redevelopment sites currently served by water quality best management practices, the post-development, nonpoint-source

pollution runoff loads of phosphorus and lead shall not exceed the existing loads or the loads set forth in subsection (d)(1)a, whichever are greater.

(2) Compliance ~~The following stormwater management options shall be considered to comply~~ with the requirements of subsection (d)(1)~~:~~ shall be achieved on site through incorporation of best management practices that achieve the required control, unless the director of environmental engineering determines that one of the following storm water management options has been satisfied.

~~a. Incorporation on the site of best management practices that achieve the required control.~~

~~b.~~a. ~~Compliance with a locally adopted regional stormwater management program incorporating pro rata share payments pursuant to the authority provided in Code of Virginia, § 15.2-2243, that achieves equivalent water quality protection~~. Mitigation measures approved by the director of environmental engineering in conjunction with the plan approval process. Mitigation measures may include, but are not limited to, the following: (i) construction of BMP's on or off-site, (ii) retrofitting an existing BMP on or off-site, (iii) stream or buffer enhancements or restoration, (iv) purchasing of credits from owners of other property in the watershed when best management practices on the other property exceed the required control, (v) use of perpetual conservation or open space easements, and (vi) if the foregoing mitigation measures are not adequate to achieve the required control, payment to the County of cash sufficient to achieve the required control through other mitigation measures as determined by the director of environmental engineering. Mitigation measures shall be approved by the director of environmental engineering only when: (i) the proposed mitigation measures are located within the Upper Swift Creek watershed, (ii) the proposed mitigation measures are sufficient to achieve the required control, and (iii) the applicant provides an engineer's certification that there is no viable means of sufficiently achieving the required control on site. Unless otherwise determined by the director of environmental engineering, mitigations measures shall be located in the same subwatershed of the Upper Swift Creek watershed.

b. Property that the director of planning has determined to be vested as to the right to comply with the required control through pro rata payments for regional BMPs pursuant to Article VI of chapter 12 repealed [date of adoption], shall achieve compliance through (i) a pro rata payment equal to what would have been required under chapter 12, which shall be used for mitigation measures in the

watershed as determined by the director of environmental engineering, (ii) compliance with the other provisions of 19-238(d)(2), or (iii) a combination thereof.

c. Compliance with a state or locally implemented program of stormwater discharge permits pursuant to section 402(p) of the federal Clean Water Act, as set forth in 40 CFR 122, 123, 124 and 504, dated December 7, 1988.

d. For a redevelopment site that is completely impervious as currently developed, restoring a minimum of 20 percent of the site to vegetated open space.

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~~**Sec. 19-238.5. Boundary adjustments.**~~

(a) ~~Boundary adjustments, as provided for in section 19-231, shall not be permitted in the Upper Swift Creek watershed. The director of environmental engineering shall not grant an exception to this provision, provided, however, that an applicant may seek relief from this provision pursuant to section 19-19.~~

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~~**Sec. 19-240. Exceptions.**~~

~~(a) A written request for an exception to this division's requirements shall be made to the director of environmental engineering. It shall be accompanied by a water quality impact assessment identifying the impact of the proposed exception on such aspects as water quality and lands within the Upper Swift Creek watershed.~~

~~(b) The director of environmental engineering shall review the exception request and the water quality impact assessment. In making a determination, he may impose conditions or require alternatives that are necessary to protect water quality, protect the public safety and welfare and further the purpose and intent of this division. He may grant the exception if he finds all of the following:~~

~~(1) Granting the exception shall not confer any special privileges upon the applicant that are denied by this division to other property owners in the Upper Swift Creek watershed.~~

~~(2) The exception request is not based on conditions or circumstances that are self-created or self-imposed.~~

~~(3) The exception request is the minimum necessary to afford relief.~~

~~(4) The exception request will be consistent with the purpose and intent of this division and not injurious to the neighborhood or otherwise detrimental to the public safety and welfare.~~

~~(5) Reasonable and appropriate conditions are imposed which will prevent the exception request from causing a degradation of water quality.~~

~~(c) Any person aggrieved by the director of environmental engineering's decision concerning an exception request may appeal the decision in accordance with section 19-268.~~

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(2) That these ordinances shall become effective immediately upon adoption.